



**What is claimed is:**

1           1. An active inductor for use on an integrated circuit having a power supply  
2 voltage supplied from a first power supply terminal; comprising:  
3           an metal oxide semiconductor (MOS) transistor having a gate terminal, a drain  
4 terminal, and a source terminal, said drain terminal being coupled to said power supply  
5 voltage and said source terminal being one of the terminals of said active inductor; and  
6           a resistor having a first terminal coupled to said gate terminal and a second  
7 terminal coupled to a voltage that is derived from said power supply voltage and has a  
8 larger absolute value than said power supply voltage supplied by said first power supply  
9 terminal and the same sign as said power supply voltage.

1           2. The invention as defined in claim 1 wherein said other terminal of said active  
2 inductor is said first power supply terminal.

1           3. The invention as defined in claim 1 wherein said MOS transistor also has a  
2 bulk terminal, said bulk terminal being connected to a second power supply terminal.

1           4. The invention as defined in claim 1 wherein MOS transistor is a negative metal  
2 oxide semiconductor (NMOS).

1           5. The invention as defined in claim 1 wherein MOS transistor is a positive metal  
2 oxide semiconductor (PMOS).

1           6. The invention as defined in claim 1 wherein said MOS transistor also has a  
2 bulk terminal, said bulk terminal being connected to a second power supply terminal, and  
3 wherein said power supply voltage supplied from said first power supply terminal is  
4 higher than a voltage supplied from said second power supply terminal.

1           7. The invention as defined in claim 1 wherein said MOS transistor also has a  
2 bulk terminal, said bulk terminal being connected to a second power supply terminal, and  
3 wherein said power supply voltage supplied from said first power supply terminal is  
4 lower than a voltage supplied from said second power supply terminal.

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1           8. The invention as defined in claim 1 wherein said MOS transistor is a negative  
2 metal oxide semiconductor (NMOS), said NMOS transistor also has a bulk terminal, said  
3 bulk terminal being connected to a second power supply terminal, and wherein said first  
4 power supply terminal is the positive power supply terminal for said integrated circuit  
5 and said second power supply terminal is the negative power supply terminal for said  
6 integrated circuit.

1           9. The invention as defined in claim 1 wherein said MOS transistor is a positive  
2 metal oxide semiconductor (PMOS), said PMOS transistor also has a bulk terminal, said  
3 bulk terminal being connected to a second power supply terminal, and wherein said first  
4 power supply terminal is the negative power supply terminal for said integrated circuit  
5 and said second power supply terminal is the positive power supply terminal for said  
6 integrated circuit.

1           10. The invention as defined in claim 1 wherein said voltage that is derived from  
2 said power supply voltage and has a larger absolute value than said power supply voltage  
3 supplied by said first power supply terminal and the same sign as said power supply  
4 voltage has a larger absolute value than said power supply by one threshold voltage of  
5 said MOS transistor.

1           11. The invention as defined in claim 1 wherein said voltage that is derived from  
2 said power supply voltage is generated from said power supply voltage by a high voltage  
3 generator.

1           12. The invention as defined in claim 1 further including on said integrated  
2 circuit a high voltage generator that generates said voltage that has a larger absolute value  
3 than said power supply voltage supplied by said first power supply terminal and the same  
4 sign as said power supply voltage.

1           13. The invention as defined in claim 1 further including on said integrated  
2 circuit a high voltage generator that generates said voltage that has a larger absolute value  
3 than said power supply voltage supplied by said first power supply terminal and the same  
4 sign as said power supply voltage, said high voltage generator comprising:

5           an oscillator generating an oscillating output signal;

6           a voltage doubler receiving as an input said oscillating output signal from said  
7 oscillator and supplying as an output a signal that has an average larger absolute value  
8 than said power supply voltage supplied by said first power supply terminal and the same  
9 sign as said power supply voltage;

10          a clamp which receives as an input said output of said voltage doubler and  
11 supplies an output voltage substantially clamped to a prescribed value that has a larger  
12 absolute value than said power supply voltage supplied by said first power supply  
13 terminal and the same sign as said power supply voltage;

14          and a ripple filter which filters said output of said clamp and supplies the output  
15 of said high voltage generator, which said voltage that has a larger absolute value than  
16 said power supply voltage supplied by said first power supply terminal and the same sign  
17 as said power supply voltage.

1           14. An active inductor on an integrated circuit, comprising:

2           a metal oxide semiconductor (MOS) transistor; and

3           a high voltage generator which generates a voltage outside the range of voltages  
4 being supplied to said integrated circuit by a power supply;

5           wherein said MOS transistor is coupled to said high voltage generator so as to  
6 bias said MOS transistor with said voltage outside the range of voltages being supplied to  
7 said integrated circuit by a power supply.

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15. The invention as defined in claim 14 wherein said high voltage generator comprises:

an oscillator generating an oscillating output signal;  
a voltage doubler receiving as an input said oscillating output signal from said oscillator and supplying as an output a voltage signal that has an average voltage that is outside the range of voltages being supplied to said integrated circuit by a power supply;  
a clamp which receives as an input said output of said voltage doubler and supplies an output voltage substantially clamped to a prescribed value that is outside the range of voltages being supplied to said integrated circuit by a power supply;  
and a ripple filter which filters said output of said clamp and supplies the output of said high voltage generator.

16. An active inductor on an integrated circuit, said active inductor comprising a metal oxide semiconductor (MOS) transistor and being characterized in that said active inductor is biased using a voltage generated on said integrated circuit that is beyond the range of the voltage supplied by a power supply for operating said integrated circuit.

17. The invention as defined in claim 16 wherein said MOS transistor is a negative metal oxide semiconductor (NMOS) transistor

18. The invention as defined in claim 16 wherein said MOS transistor is a positive metal oxide semiconductor (PMOS) transistor

19. The invention as defined in claim 16 wherein said active inductor is biased by coupling a gate of said MOS transistor to said voltage generated on said integrated circuit that is beyond the range of the voltage supplied by a power supply for operating said integrated circuit via an impedance.